PPP

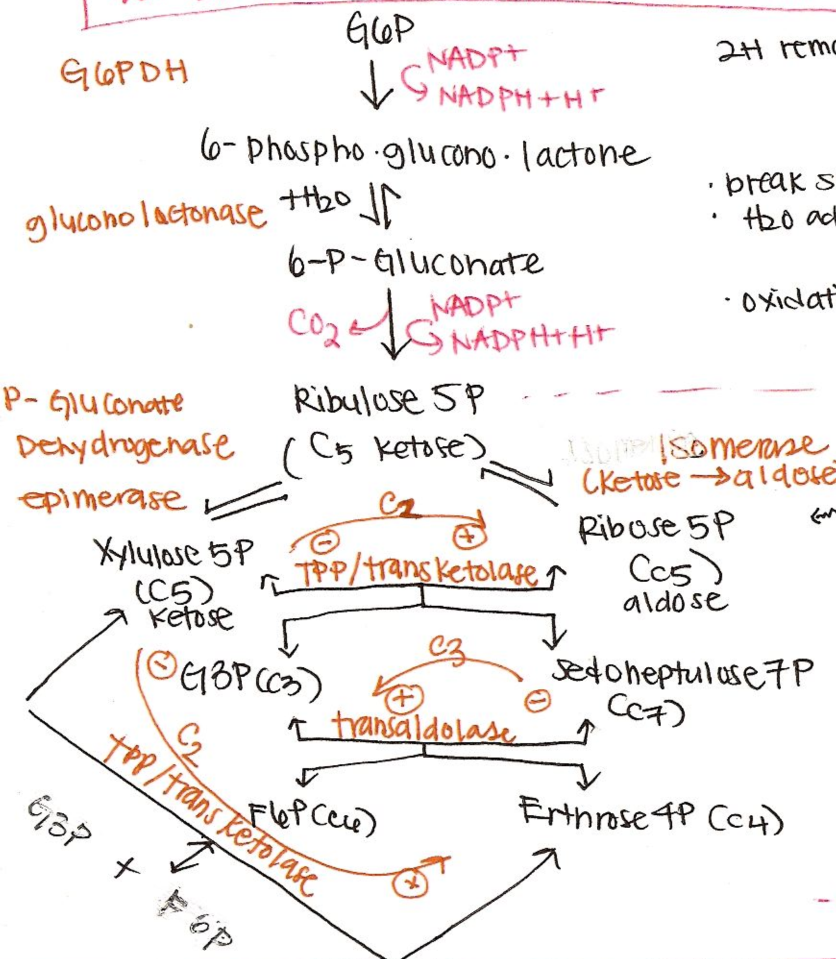
- In cytoplasm:
  1) alt. C_6 degradation to generate (a) NADPH (b) Ribose
  (2) conversion of $C_6 \leftrightarrow C_5$ (to enter glycolytic pathway or to make ribose compound)

NADPH important in serving as H/e donor in reductive biosynthesis.
1) Fatty Acid synthesis
2) Protect RBC from oxidative injury

catabolism	vs.	anabolism
· oxidative		· Reductive
· produce energy		· energy conserving
· breakdown to simple mol.		· synthesis of large molecule / storage

Phase I

$G6P + 2NADP^+ + H_2O \longrightarrow Ribulose5\text{-}P + 2NADPH^+ + 2H^+ + CO_2$



2H removed @ C_1

· break sugar ring
· H_2O added to C_5

· oxidative decarboxylation @ C_1

6'(\<Wt.C

~ h-h!d<\t1\t

@ some condition:
← Rxn stays here to use R5P + NADPH

· generating G3P

- generating F6P

- generating G3P + F6P

phase 2:

$2 X5P + R5P \rightleftharpoons 2 F6P + G3P$
$\quad\quad = $
$3R5P \rightleftharpoons 2F6P + G3P$

dependent upon: need for NADPH vs. Ribose
1) NADPH = Ribose : stalls @ Ribose 5P
2) R5P >> NADPH: G6P $\xrightarrow{\text{Glycolysis}}$ 2F6P + G3P $\xrightarrow{\text{Reverse PPP}}$ 3R5P
3) NADPH needed: $G6P + 12NADP\ H + 7H_2O \longrightarrow 6CO_2 + 12NADPH + 12H^+ + P$
↳ 1 G6P generate 12 NADPH through PPP + gluconeogensis

$6(C_6) \longrightarrow 6(C_5) + 12NADPH + 6CO_2$
$6(C_5) \longrightarrow 4(C_6) + 2(C_3)$
$4(C_6) + 2(C_3) \longrightarrow 5(C_6)$